

**AMAZING
SPACE**

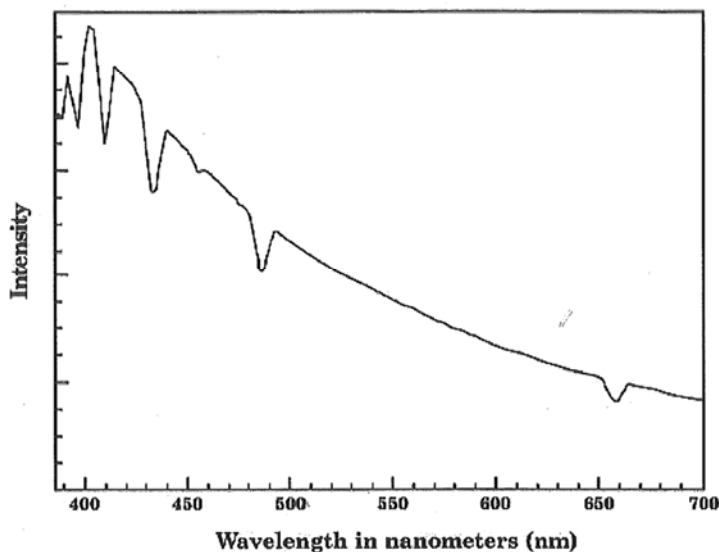
Stellar Fingerprints: The Spectra of Stars

Activity Sheet 1: Introduction to Stellar Spectra

Name _____

Study the visible spectrum of the star Vega, which shows how the intensity of the starlight changes with wavelength. Write three questions you would like answered.

Visible Spectrum — Vega



1. What are the down dips?
2. Why does the graph start high and decrease?
3. What is intensity?

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Stellar Fingerprints: The Spectra of Stars

Activity Sheet 2: Identifying Emission Spectra

Name _____



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Name _____

1. Use the space provided to sketch the emission spectra of the elements. Then write the name of the element in the space provided under the spectrum.

Violet _____ Red

_____ emission spectrum

Violet _____ Red

_____ emission spectrum

Violet _____ Red

_____ emission spectrum

Violet _____ Red

_____ emission spectrum

2. Explain how the bands of light are produced in the emission spectra.

e⁻ in atom are excited by electricity, but as jump back down they emit a photon of light → the line on spectra

3. Explain how you were able to identify the unknown element contained in the ~~discharge~~ ~~tube~~ spectrum.

→ compare to known spectra like hydrogen...

4. Why would astronomers need to know how to identify elements?

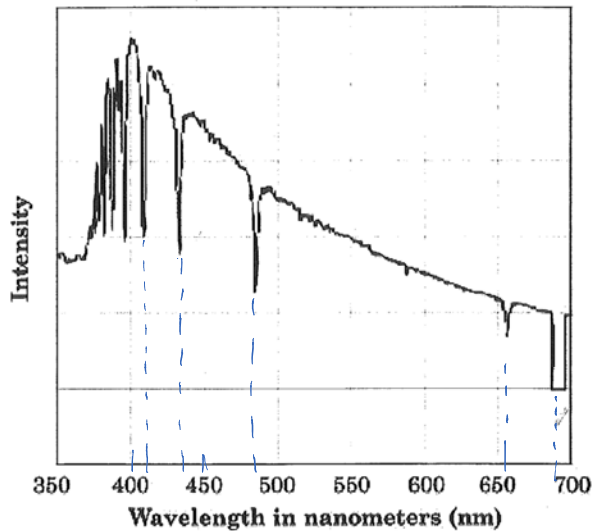
Activity Sheet 4: Interpreting Stellar Spectra

Name _____

Activity Sheet 4: Interpreting Stellar Spectra

Name _____

Visible Spectrum — Type A Star

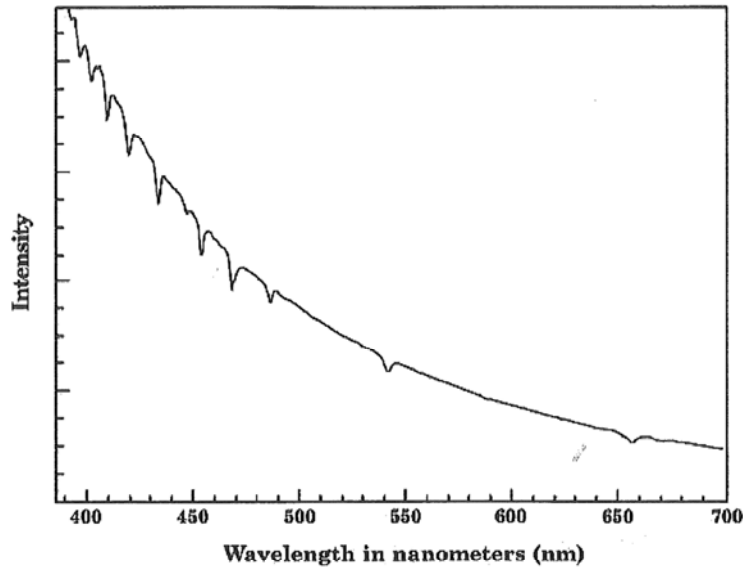


1. The stellar spectrum above shows dips in the line. The dips are points where atmospheric gases absorb the light coming from the star. These points correspond to particular wavelengths. List the wavelengths that show absorption in the visible range of 400 – 700 nm.

415 nm 435 nm 486 nm 655 nm 690 nm
H lines

2. Explain the significance of the wavelengths recorded above.

Visible Spectrum — Star BD + 75 325



3. Is hydrogen the only element present in the atmosphere of star BD +75 325 whose spectrum is pictured above? Explain. What additional information would you need in order to identify any other element(s) that might be present? Where might you find this information?

*H is not the only element ... too many other lines.
Need other spectra -- internet*

4. Explain why astronomers can use spectroscopy to identify the composition of objects that emit light.

every element has a unique spectrum